

**REMARKS**

The Amendment, filed in response to the Office Action mailed October 1, 2008, is believed to fully address all issues raised in the Action. A favorable reconsideration of the application is respectfully requested.

**I. Preliminary Matters**

In the Office Action, claims 6-10 are considered and all the claims are rejected.

Upon entry of the current amendments, which is respectfully requested, claims 6, 7, and 9-10 will be pending in the application. Claim 6 is amended to more clearly set forth the subject matter and to incorporate the subject matter of claim 8. Claim 8 is canceled accordingly. Support for the amendments to claim 6 can be found at least at the second paragraph on page 14 of the present specification.

Claim 9 is amended to more clearly set for the claimed subject matter. Support for the amendments to claim 9 can be found at least at the full paragraph on page 10. Claim 9 is further amended to correct dependency from claim 6. Claim 10 is amended to correct claim dependency.

No new matter is added. Entry of the Amendment is respectfully requested.

Applicants thank the Examiner for clarifying in the Examiner Interview Summary mailed November 18, 2008 that the objection to the specification, as indicated in the Summary of the Action, was meant to the objection to the claims.

**II. Response to Objection to Claims 9 and 10**

Claims 9 and 10 are objected to because the preamble of the claims incorrectly recite “any one of claims 6”. Claims 9 and 10 are amended to correctly recite dependence from claim 6, thereby obviating the objection to the claims.

**III. Response to Claim Rejections under 35 U.S.C. § 103**

A. Claims 6-10 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Kimura et al. (EP 1 112 692 A1, “Kimura”) in view of Mäyrä-Mäkinen et al. (US 5908646, “Mäyrä-Mäkinen”).

B. Claims 6-10 stand rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Kimura et al. (EP 1 112 692 A1, “Kimura”) in view of Germond et al. (WO 0188150, “Germond”).

Applicants note that all the references, except Germond, were cited in the previous Action, and the Office reiterates in general the same rationale as was set forth in the Office Actions of August 22, 2007 and April 8, 2008.

To the extent that the cited references and the rejections are the same or substantially the same, Applicants reiterate herein, by incorporation by reference, the arguments presented in the previously submitted Amendments and Responses.

In addition, Applicants respectfully traverse the rejection and submit the followings.

Present claim 6 recites a process for producing a natural cheese, which comprises (1) adding a lactic acid bacteria starter to a milk component; (2) forming a curd from the milk component mixed with the lactic acid bacteria starter; (3) processing thus formed curd to remove

whey; and (4) forming pressed pieces of the curd, wherein the process further comprises adding an yeast extract to the milk component before formation of the curd in step (2); and incubating the curd obtained in the above (4), at 20 to 35°C for 16 to 26 hours, to produce the natural cheese, wherein the lactic acid bacteria starter comprises a lactic acid bacterium belonging to *Lactobacillus gasseri* having a disinfection potency against *Helicobacter pylori*; and wherein the natural cheese comprises the lactic acid bacterium belonging to *Lactobacillus gasseri* having a disinfection potency against *Helicobacter pylori*, in the number of a viable count of  $10^7$  cfu/g or more when preserved at a temperature of 10°C or less for 6 months.

The currently presented claim 1 clarifies and more clearly sets forth the feature of the inventive subject matter. Thus, the process adds yeast extract to milk component before formation of curd; and the curd, after molding and pressing, is subject to incubation at certain conditions.

Addition of yeast extract to milk component before formation of curd

As described in Fig. 3, when cheese is produced by adding yeast extract to milk component before formation of curd, *L. gasseri* OLL 2716 increases during one month of preservation and keeps a high bacterial count. On the other hand, when cheese is produced without adding yeast extract to the milk component, *L. gasseri* OLL 2716 dose not increase during preservation of cheese and the bacterial count decreases with lapse of time of preservation.

Incubation of curd after molding and pressing

The curd, after it is molded and pressed, is incubated at 20-35°C for 16-26 hours. Such

incubation is carried out without cooling (claim 7).

The combination of the above two features renders the increase and maintaining of the number of *L. gasseri* OLL 2716 in the resulting natural cheese.

Applicants note that the Office responds to Applicants argument that cited references do not teach adding yeast extract to the milk before formation of curd, by asserting that an ordinary skilled in the cheese making art would know that the starter culture is added to the milk before adding the enzyme for curd formation; any other addition should also be carried out before the addition enzyme for the formation of curd; yeast extract is either contained in the starter culture or can be added; and the reserve starter cultures always have yeast extract to support growth.

Applicants respectfully disagree. In the currently presented claim 1, the feature of adding yeast extract to the milk component before a curd is formed is clarified.

Applicant submit that the addition of yeast extract in the present invention is different from those used in the art to which the present invention pertains. Conventionally, yeast extract is added during or for the cultivation of a starter which includes lactic acid bacteria. In the conventional method, yeast extract is added to medium for incubating starter including lactic acid bacteria for cheese. The amount of yeast extract included in the resulting starter is very low. Even if the yeast extract is not consumed during the incubation of the starter, the amount of the yeast extract present in the starter after incubation is as low as 0.001% per milk component.

On the other hand, as described in the paragraph bridging pages 6 and 7 of the present specification, the claimed method defined in claim 1 requires the addition of additional yeast extract to the milk component, which is mixed with a starter. Thus, *L. gasseri* OLL 2716 can increase during one month of preservation and keep the high bacterial count in cheese of the

present invention. The Office asserts that “Furthermore since yeast extract is used for the culture of *Lactobacilli*, the culture of *Lactobacilli* being added to the milk before the formation of the curd will always carry some yeast extract with it.” (Page 6, paragraph 19 of the Office Action). In this regard, Applicant submit that the yeast extract pointed out by the Office seems to be yeast extract added to a medium for starter cultivation. In the present application, as recited in currently presented claim 1, an yeast extract is added to keep the bacterial count of *Lactobacillus gasseri*, not to the cultivation of a starter.

Also, the incubation of the curd, as defined in the currently presented claim 1, is different from aging (or maturation) of the curd, which is conventionally carried out during the cheese production process. The incubation of the curd according to the present invention is carried out under a condition which increases the number of living bacteria, including *L. gasseri*. On the other hand, the conventional aging or maturation step is carried out under a condition to allow improvement of flavor by hydrolysis of protein which is usually accomplished by enzymes produced by bacteria.

The incubation of curd according to the present invention allows increasing a bacterial count of *L. gasseri*, which cannot be attained without the incubation of curd, because, under conventional aging (or maturation) conditions which does not include the curd incubation, the amount of lactic acid increases, not *L. gasseri*.

As shown in the specification of the instant application (e.g., Working Examples 2 and 3), the method defined in the currently amended claim 1 enables the number of *L. gasseri* to increase during one month of beginning of aging (or maturation) and keep a high bacterial count, as opposed to the usual decrease in bacterial counts, accompanied by an increase in lactic acid

contents, during aging (or maturation) of the conventional cheese production method.

Therefore, the present invention allows an increase of bacterial counts from the initial bacterial count added to milk component. It is important to develop food having a high bacterial count of a lactic acid having disinfecting property against *H. pylori*, when a person would like to take the lactic acid having disinfecting property against *H. pylori* in an amount which is enough for attaining disinfection.

In conventional conditions for producing cheese, *L. gasseri* cannot grow and survive in the cheese, dominating over lactic acid bacteria for cheese. As described in the last paragraph on page 6 of the specification, the inventors of the presently claimed invention have unexpectedly found for the first time that, by adding an additional yeast extract to the milk component that is mixed with a starter and incubating a cheese curd after molding and pressing, *L. gasseri* unexpectedly grows and survives in the cheese dominantly over lactic acid bacteria for cheese.

As described in Table 7 on page 25 of the specification, the *L. gasseri* count in “Raw milk with starter” is 6.30 log cfu/g while *L. gasseri* count in “Salt-free curd (Day following production)” is 9.08 log cfu/g. It was not conceived until the present invention to increase bacterial count of *L. gasseri* in a cheese from  $10^6$  to  $10^9$ /g. During production process of cheese, it is difficult to increase *L. gasseri* without killing other lactic acid bacteria for cheese. The present invention makes it possible to consume a natural cheese with *L. gasseri* in high bacterial counts.

It is noted that the Office asserts that “Cheese, especially hard cheese, has a much lower water activity and under the conditions of lower water activity survival rate will be high”

(paragraph 16 on page 6 of the Action). Applicants respectfully disagree and submit that the survival rate depends on the conditions for bacterial growth. Furthermore, it is well known in the art that it is not easy to increase the number of lactic acid bacteria in cheese because water activity is low in cheese.

In view of the above, Applicants respectfully submit that claim 6 is patentable over the combinations of Kimura and Mäyrä-Mäkinen or Germond. Claims 7, 9, and 10 are patentable, at least by virtue of their dependence from claim 6. Therefore, withdrawal of the § 103 rejection is respectfully requested.

**Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number **202-775-7588**.

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Respectfully submitted,

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